

Woodpecker1 Series Industrial Smart Camera Specifications

Literature Number: RSDNC1501V103

Version: 1.03 (Mar 25, 2018)



RELEASE HISTORY

Literature No.	Version	Date	Description
RSDNC1501V103	1.03	Mar 25, 2018	(1) Updated Table 3-1
RSDNC1501V102	1.02	Aug 29, 2017	(1) Updated Figure 1-1, 5-1 and 7-2 (2) Added IR cut filter option and its spectral transmission curve (3) Added RS485 interface
RSDNC1501V101	1.01	Nov 28, 2016	(1) Updated Table 3-1 and Table 3-3.
RSDNC1501V100	1.00	Oct 30, 2016	(1) Original issue.

Contents

WOODPECKER1 SERIES INDUSTRIAL SMART CAMERA SPECIFICATIONS	1
RELEASE HISTORY	2
CONTENTS	3
1 FEATURES	5
2 APPLICATIONS.....	6
2.1 APPLICATIONS	6
2.2 APPLICATION DIAGRAM	6
2.3 RELATED PRODUCTS	6
3 SPECIFICATIONS	7
3.1 PRODUCT MODEL - CAMERA.....	7
3.2 PRODUCT MODEL - I/O MODULE.....	8
3.3 PRODUCT MODEL - LED ILLUMINATOR	8
3.4 SPECIFICATIONS	9
3.5 SOFTWARE RESOURCES	10
3.6 SYSTEM BLOCK DIAGRAM	11
4 INTERFACE SPECIFICATIONS - CAMERA.....	12
4.1 PORTS ON PANEL.....	12
4.2 INTERNAL USB2.0 PORT.....	12
4.3 LED DRIVERS	13
4.4 LED INDICATORS	13
5 INTERFACE SPECIFICATIONS - I/O MODULE.....	14
5.1 CAMERA PORT.....	15
5.2 POWER PORT.....	15
5.2.1 <i>Power Input</i>	15
5.2.2 <i>Trigger Input</i>	15
5.2.3 <i>LED Driver output</i>	16
5.3 GENERAL INPUT PORT	16
5.4 GENERAL OUTPUT PORTS.....	17
5.5 RS232 PORT	18
5.6 RS485 PORT	18
5.7 ETHERNET PORT	19
5.8 USB2.0 PORTS	19
5.9 POWER BUTTON	19
6 OPERATION INSTRUCTIONS.....	20
6.1 SDK	20

6.2	SHUTTER TIME	20
6.2.1	<i>Minimum Shutter Time</i>	20
6.2.2	<i>Maximum Shutter Time</i>	20
6.3	LED DRIVERS	20
6.4	TRIGGER INPUT	21
6.4.1	<i>Active Triggering Edge</i>	21
6.4.2	<i>Input Signal Glitch Filter</i>	21
6.4.3	<i>Triggering Delay</i>	21
6.4.4	<i>Delayed Triggering</i>	21
6.5	GENERAL INPUT	21
6.5.1	<i>Active Triggering Edge</i>	21
6.5.2	<i>Input Signal Glitch Filter</i>	21
6.5.3	<i>Input Delay</i>	22
6.6	GENERAL OUTPUT.....	22
6.7	CAMERA RECOVERY	22
7	COLOR FILTER TRANSMISSION	23
8	DIMENSIONS	24
9	DOCUMENTS	25
9.1	RELATED DOCUMENTS	25
9.2	INTELLECTUAL PROPERTY STATEMENT	25
10	CONTACT	26

1 FEATURES

1. Intel® ATOM™ CPU inside (E3845@1.91GHz, quad-core, 64-bit)
2. 4G-Byte DRAM, 64G-Byte storage, soldered on board
3. 64-bit OS: Windows 10 IoT Enterprise, Linux (Ubuntu 16.04)
4. Image sensor resolution from 0.4 to 20MP
5. HDMI display port
6. 2 programmable constant current LED drivers
7. I/O module and connection cables are included
8. Support connecting to other GigE or USB2.0 cameras
9. Complete SDK and technical supporting documents
10. Wide operation temperature from -40°C to +80°C
11. 3-year warranty

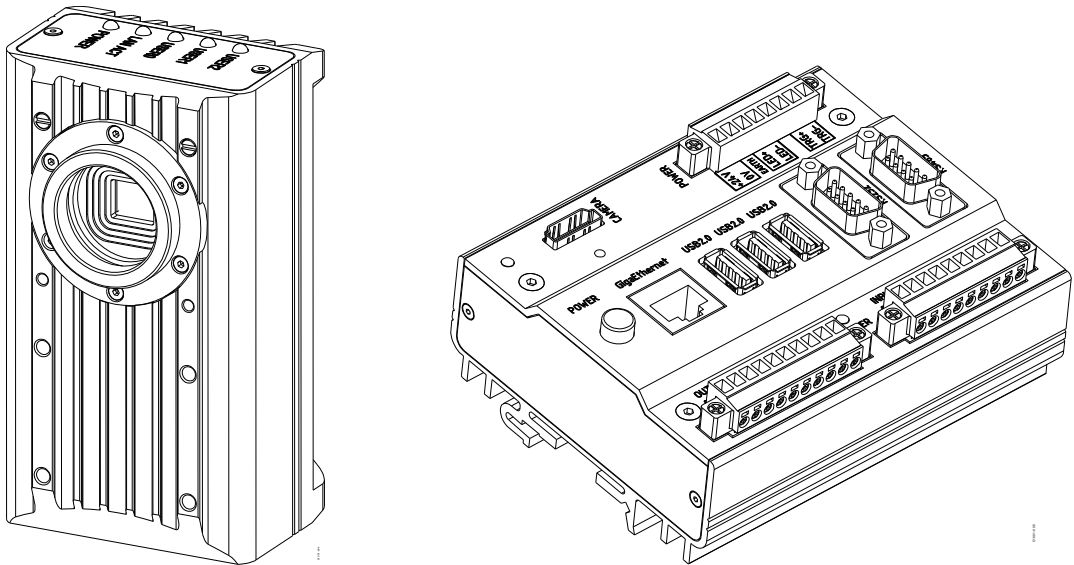


Figure 1-1 Woodpecker1 Camera and I/O Module

2 APPLICATIONS

2.1 Applications

- Surface inspection , High-accuracy measure
- OCR, Bar code/2D code recognition
- Position , Robot arm guidance

2.2 Application Diagram

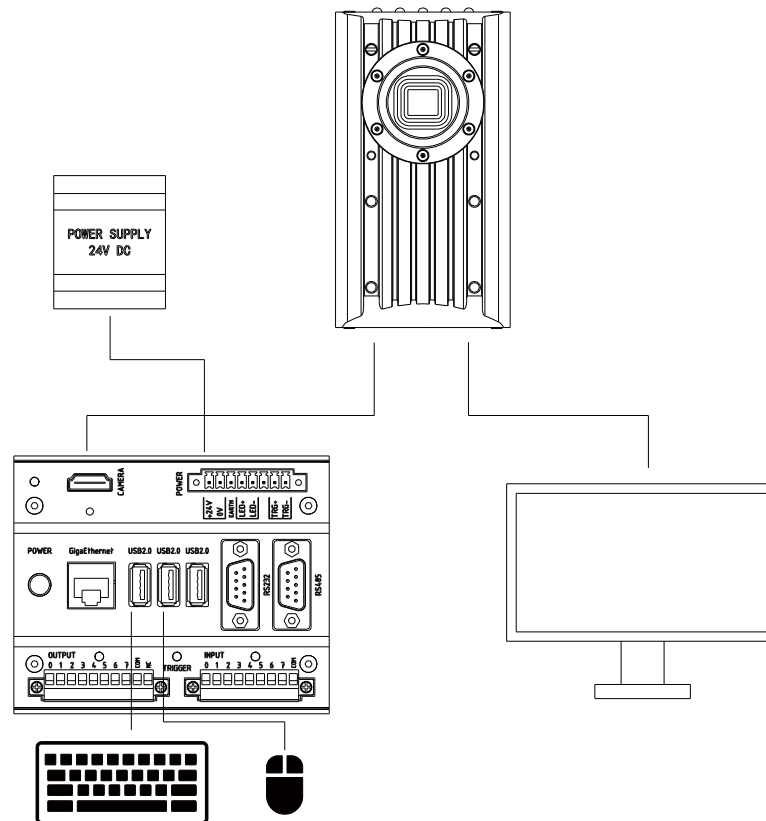


Figure 2-1 Application Diagram

2.3 Related Products

- Beaver2 Series Vision Controller

3 SPECIFICATIONS

3.1 Product Model - Camera

Table 3-1 Product Model - Camera

Model ^[1]	Type	Resolution	MAX FPS	Shutter	Sensor Description	Sensitivity Ratio ^[2]
RSWP101MELN	Mono	0.4M (720x540)	200	Global	SONY CMOS IMX287LLR, 1/3", 6.9um	20
RSWP101SELN	Color	0.4M (720x540)	200	Global	SONY CMOS IMX287LQR, 1/3", 6.9um	12
RSWP112MELN	Mono	1.3M (1280x1024)	90	Global	ONSEMI CMOS NOIP3SN1300A, 1/2",	3.4
RSWP112SCLN	Color	1.3M (1280x1024)	90	Global	ONSEMI CMOS NOIP3SE1300A, 1/2",	2.9
RSWP113MELN	Mono	1.6M (1440x1088)	107	Global	SONY CMOS IMX273LLR, 1/3", 3.45um	4.9
RSWP113SELN	Color	1.6M (1440x1088)	107	Global	SONY CMOS IMX273LQR, 1/3", 3.45um	3.0
RSWP126MELN	Mono	2M (1616x1232)	30	Global	SHARP CCD RJ31N4AD0DT, 1/1.8", 4.4um	5.5
RSWP126ACLN	Color	2M (1616x1232)	30	Global	SHARP CCD RJ31N3AD0DT, 1/1.8", 4.4um	3.7
RSWP130MELN	Mono	3.2M (2048x1536)	55.6	Global	SONY CMOS IMX265LLR, 1/1.8", 3.45um	4.7
RSWP130SCLN	Color	3.2M (2048x1536)	55.6	Global	SONY CMOS IMX265LQR, 1/1.8", 3.45um	3
RSWP155MELN	Mono	5M (2448x2048)	15	Global	SHARP CCD RJ32S4AD0DT, 2/3", 3.45um	2.6
RSWP155ACLN	Color	5M (2448x2048)	15	Global	SHARP CCD RJ32S3AD0DT, 2/3", 3.45um	1.7
RSWP150MELN	Mono	5.1M (2456x2048)	35.7	Global	SONY CMOS IMX264LLR, 2/3", 3.45um	4.7
RSWP150SCLN	Color	5.1M (2456x2048)	35.7	Global	SONY CMOS IMX264LQR, 2/3", 3.45um	3
RSWP160MELN	Mono	6.3M (3072x2048)	30	Rolling	SONY CMOS IMX178LLJ, 1/1.8", 2.4um	1.6
RSWP160SCLN	Color	6.3M (3072x2048)	25	Rolling	SONY CMOS IMX178LQJ, 1/1.8", 2.4um	1.1
RSWP1M0MELN	Mono	20M (5472x3648)	20	Rolling	SONY CMOS IMX183CLK, 1", 2.4um	2.0
RSWP1M0SELN	Color	20M (5472x3648)	10	Rolling	SONY CMOS IMX183CQJ, 1", 2.4um	1.2

Notes:

[1] Ordering Information:

R S W P 1 1 3 M E L N

aaaa b cc d e f g

aaaa: Woodpecker Series Industrial Smart camera

b: 1: the 1st generation

cc: Model number

d: S/A/B: color image sensor

M/N: monochrome image sensor

e: type of filter

E: none filter

C: IR cut filter (only for color cameras)

f: L: two LED drivers

g: N: general product

[2] The sensitivity ratio is a linear ratio based on the sensitivity value of SONY CCD ICX445AQA. The higher this ratio is, the more sensitive the camera will be.

3.2 Product Model - I/O Module

Table 3-2 Product Model - I/O Module

Model	RSWP-M100B
Description	Woodpecker1 Series Industrial Smart Camera I/O Module

3.3 Product Model - LED Illuminator

Table 3-3 Product Model - LED Illuminator

Model	Color	Wave Length or Color Temperature	Beam Angle	Max Driving Current^[3]	Note
RSWP-LW45	White	6500K	45°	300mA	
RSWP-LW90	White	6500K	90°	300mA	
RSWP-LR60	Red	624nm	60°	100mA	
RSWP-LY60	Yellow	590nm	60°	100mA	
RSWP-LG60	Green	525nm	60°	100mA	
RSWP-LB60	Blue	470nm	60°	100mA	
RSWP-LV60	Violet	395nm	60°	100mA	
RSWP-LI60	NIR	850nm	60°	300mA	

Note:

[1] The LED driving current can be adjusted by software. But it is **NOT ALLOWED** to set the current over the upper limit. Or it will greatly reduce the LED life.

3.4 Specifications

Table 3-4 Specifications

CPU	CPU Model	Intel® ATOM™ CPU E3845
	CPU Type	Quad-core 1.91GHz, 64-bit x86
	L2 Cache	2M-byte
	GPU	Support DirectX11, OpenGL3.0, OpenCL1.2
	Memory	4G-byte DDR3L-1333 (solder on board)
	Storage	64G-byte eMMC5.0 Flash (solder on board)
I/O Module	Ethernet	One Gigabit Ethernet by Intel® I210 controller
	USB	3x USB2.0 ports 1x internal USB 2.0 (inside camera casing, dedicated for USB dongle)
	Monitor Port	1x HDMI port, support resolutions from VGA (640x480) to 1080P
	Serial Port	1x RS232 (TX and RX only) 1x RS485
	Trigger Input	1x Isolated trigger input (5V/12V/24VDC supported)
	General Input	8x Isolated input ports (5V/12V/24VDC supported)
	General Output	8x isolated NPN type output ports (Max current 0.3A, Max voltage 40VDC)
Special Functions	LED Driver	2x constant current LED drivers, output current adjustable: Camera LED driver only supports ROSEEEK LED illuminator, with max output 0.3A/24V I/O module LED driver supports user's LED Illuminator, with max output 1.5A/24V
	LED Indicator	Five red/green indicators: Power, LAN and three user-define LEDs
	Delayed Triggering	Up to 32 delayed instances, each instance can be delayed up to 60 seconds, time precision is 1us
	Watchdog	Hardware Watchdog timer (1 to 256 second adjustable)
	Encryption	Unique chip ID encryption; dedicated encryption chip LKT4300 (soldered on board)
	Temperature Monitoring	Internal temperature sensor, real-time mainboard temperature monitoring
	Remote Control	WoL (Wake on LAN) supported, remote control via Ethernet
OS (64bit)	Windows 10 IoT Enterprise, Linux (Ubuntu 16.04)	
Camera Power Consumption	12W Max	
Power Supply^[1]	20 to 30VDC (24VDC recommended), 2A Max	
Operation Condition^[2]	-40°C to +80°C	
Storage Condition	-40°C to +90°C	
Hardware Structure	Aluminum alloy casing, fanless design	
Dimensions	110 x 61 x 47 mm	
Weight	380 g	
Certification	CE	

Notes:

- [1] The camera power consumption is 12W at max. However, it takes more power consumption when using I/O module for external LED driving. So switching power supply with over 80W is recommended. Some switching power supply options from Meanwell

(www.meanwell.com) are as follows:

Model: EDR-120-24 DIN Rail Power Supply, output 24V/5A

Model: DR-60-24 DIN Rail Power Supply, output 24V/2.5A

Model: SE-100-24 Single Output Switching Power Supply, output 24V/4.5A

Model: GST90A24-P1M Industrial Power Adapter, output 24V/3.75A

[2] After being placed in the environment of -40°C for 12 hours, the camera can be started and run for 24 hours. The camera can run for 48 hours in the environment of +80°C. The camera can run for 48 hours in the cyclic environment (5 hours for a cycle) of the temperature from -40°C to +80°C.

[3] The RTC runs for 4 weeks by the internal recharged battery, so time value must be set again when the camera power supply has been off for more than 4 weeks.

3.5 Software Resources

Woodpecker1 series Industrial Smart Camera is x86-based, which supports general OS and applications.

[1] Supported Operating Systems (64-bit)

Windows 10 IoT Enterprise, Linux (Ubuntu 16.04)

It is supported to pre-install unlicensed Windows 10 IoT Enterprise. And legal license is available with extra cost (with Microsoft authorized license tag).

Notes:

- **Both Windows and Linux OS are highly customized by ROSEEEK to avoid any accident from power failure, which means all Woodpecker1 series camera are able to work on production line with frequent power off without shutting down OS from desktop.**
- **Only customized OS images from ROSEEEK can be used for camera OS recovery. Any other version of OS may cause system crash.**

[2] Recommended Developing Environment

Microsoft Visual Studio

Visual Studio 2015 is recommended. It is free and available on Microsoft website.

[3] Complete SDK

ROSEEEK provides complete SDK and technical supporting documents for machine vision application designs, with easy-to-read Demo program for reference.

All APIs in SDK are highly optimized and fully tested for machine vision applications.

[4] General Applications Supported

The camera system is x86-based, which supports general Windows/Linux applications and any user-designed or third-party software like:

HALCON, VisionPro, OpenCV, SimpleCV, LabVIEW, Matlab

3.6 System Block Diagram

The block diagram of Woodpecker1series industrial smart camera is as follows:

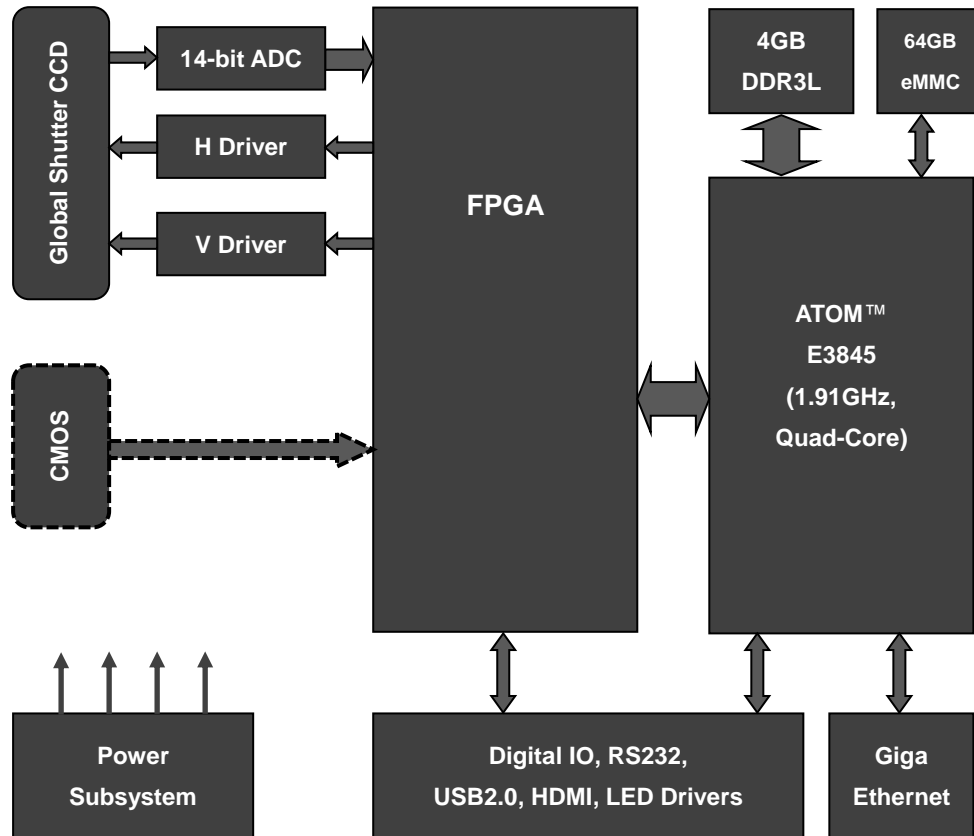


Figure 3-1 System Block Diagram

4 INTERFACE SPECIFICATIONS - CAMERA

4.1 Ports on Panel

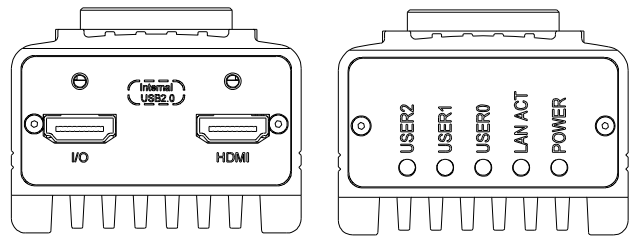


Figure 4-1 Ports on Camera Panel

There are 2 ports on panel separately marked **I/O** and **HDMI**. Woodpecker1 series industrial smart camera system consists of a camera and an I/O module. They are connected with each other by an HDMI cable (5 meters, with M3 setscrew). The port **I/O** is used to connect I/O module.



Figure 4-2 Customized HDMI Cable

Another port marked **HDMI** is used to connect an HDMI interface display and it also supports adaptive resolution from VGA (640x480) to 1080P.

With an HDMI to VGA adapter, user can also connect the camera to a VGA interface display. The qualified HDMI to VGA adapters include Lenovo® 0B47069 (better compatibility) and UGREEN® 40248 (better cost). Other adapters were not tested so do not recommend.

Notes:

- The complimentary HDMI cables have no robust enough flexural endurance, therefore cannot be used for drag chain or robot arm applications
- The 3-meter HDMI cable with M3 setscrew may not match all displays because of the connector size. User may use an HDMI extension cable to connect to the display, for example UGREEN® 10140.
- Although the **I/O** and the **HDMI** ports have same appearance, there's a fault-tolerant design which allows misoperation without any damage to camera.

4.2 Internal USB2.0 Port

This internal USB port is designed for encryption USB dongle to avoid misplug.

4.3 LED Drivers

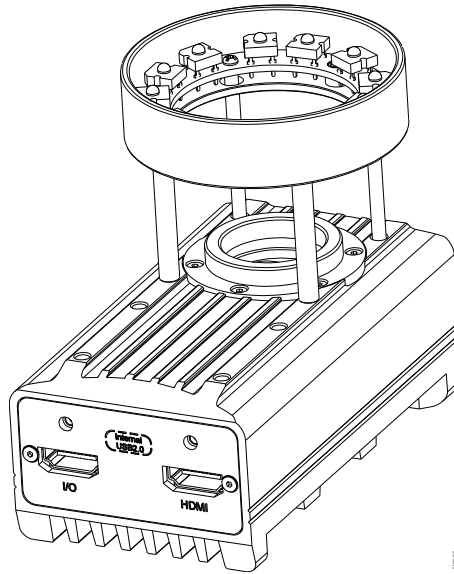


Figure 4-3 LED Driver on Camera

ROSEEK provides constant current LED drivers on both camera and I/O module with adjustable current (light intensity) for machine vision applications, which reduces system cost and increases system stability.

The internal LED driver has max output 300mA/24V for ROSEEK-designed Illuminator only.

The ROSEEK LED Illuminator (please refer to Figure 4-3 and Table 3-3) is available with multiple color and beam angle for different machine vision requirements. The inner diameter of LED Illuminator is 44mm, compatible with common Computar® FA lens like M0814-MP, M1214-MP, M1614-MP, M2514-MP, M3514-MP and M5014-MP. The LED Illuminator may not be compatible with other lens because of the dimensions.

4.4 LED Indicators

There are 5 red/green dual color LED indicators on the panel.

The LED with mark "POWER" shows the camera power status. Red means system shut down and green means system is running.

The LED with mark "LANACT" shows the network status. The LED means the network is connected or else the LED is off.

The other 3 LEDs with mark "USERn" are user programmable.

5 INTERFACE SPECIFICATIONS - I/O MODULE

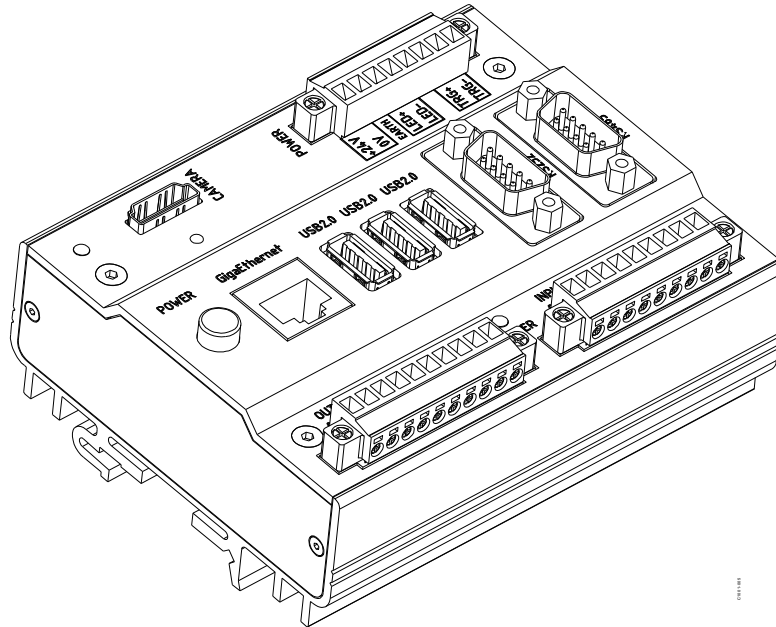


Figure 5-1 I/O Module for Woodpecker1 Camera

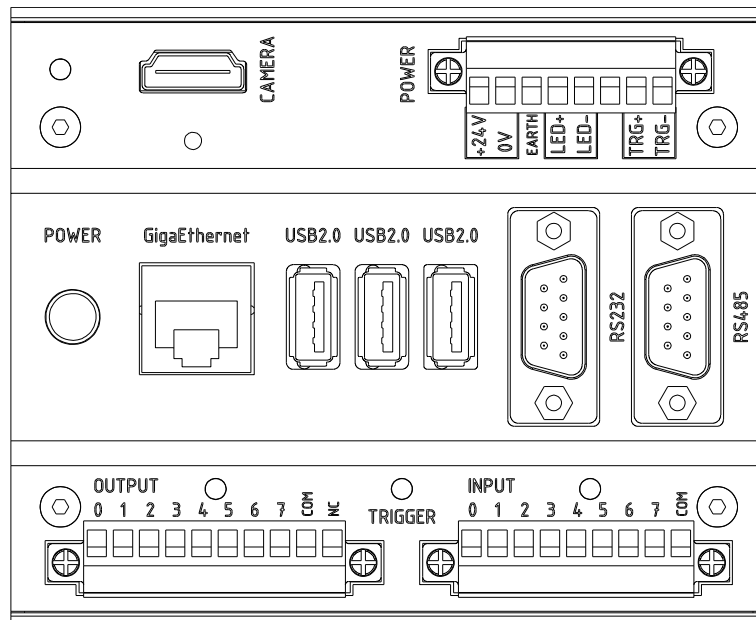


Figure 5-2 Ports on I/O Module

Woodpecker1 series industrial smart camera has an I/O module for extension I/O ports. The connection cable between camera and I/O module is up to 8 meters. The I/O module supports T-35 DIN rail installation.

Below are instructions of all ports on I/O module.

5.1 Camera Port

The port with mark "CAMERA" is for connection with camera, as shown in Figure 5-2.

With a customized cable from ROSEEK, camera can be connected with I/O module for ports extension. The cable is 5 meter long with M3 setscrews. Please contact ROSEEK for cable with up to 8 meter length.

5.2 Power Port

The 8-pin port with mark "POWER" is the power port, as shown in Figure 5-2. This connector is compatible with 16-24AWG wire.

The 8-pin power port includes power input, trigger input, LED driver output and casing Earth.

5.2.1 Power Input

The power input ports with mark "0V" and "24VDC", supports 20 to 30VDC (24VDC is recommended) input. This port supports reverse polarity protection, undervoltage protection, overvoltage protection and surge protection.

The power consumption of camera is 12W Max. However, it takes more power consumption when using I/O module for external LED driving. So power supply with over 24V/4A is recommended.

5.2.2 Trigger Input

The trigger input port with mark "TRIG+" and "TRIG-", is for external triggering signal like position sensor on production line.

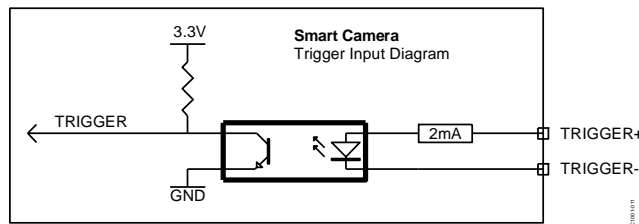


Figure 5-3 Trigger Input

Trigger input is a photo-isolated input, it can input 5V/12V/24VDC signal directly with no need for an external current-limiting resistor. -30V to +1V is recognized as low level, and +2.8 to +30V is recognized as high level, with input current below 2mA; voltage out of range from -30V to +30V may damage the circuit.

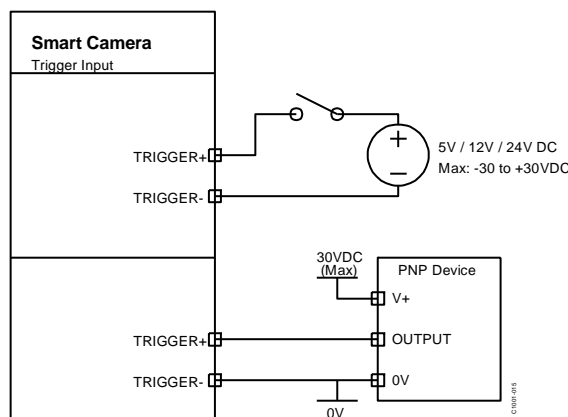


Figure 5-4 Trigger Input Connection

It is recommended to use PNP output type sensors, switches or PLC.

The functions of trigger Input, please refer to [Chapter 6.4](#).

5.2.3 LED Driver output

The ports with mark "LED+" and "LED-" are for driving general passive LED Illuminator. Please connect LED anode with "LED+" and connect cathode with "LED-".

The max output voltage is 24V (so it supports LED Illuminator under 24VDC), and the max output current is 1.5A (1500mA). User can rapidly adjust the current (or brightness of LED) from 0mA to 1500mA by software.

ROSEEEK provides special LED driving method to drive the LED only flash during the exposure time of CCD/CMOS. This function can greatly increase the life cycle of LED and reduce the system power consumption.

24V/4A power supply is recommended when any external LED is connected to the I/O module.

5.3 General Input Port

The general input port is a 9-pin port with mark "INPUT", as shown in Figure 5-2. It is compatible with 16-24AWG wire.

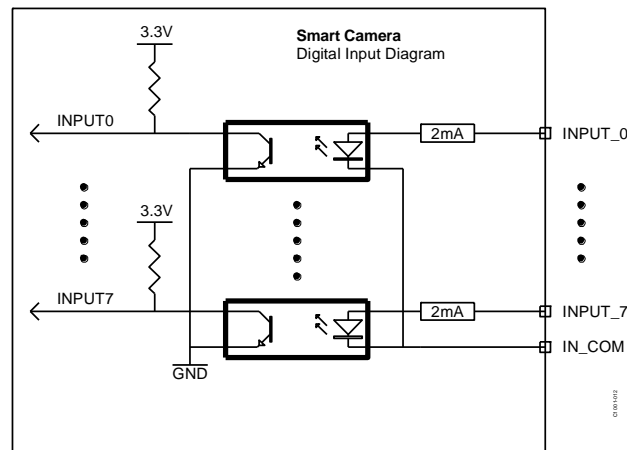


Figure 5-5 General Input Port Diagram

There are 8 photo-isolated general input ports, they can input 5V/12V/24VDC signal directly with no need for an external current-limiting resistor. -30V to +1V is recognized as low level, and +2.8 to +30V is recognized as high level, with input current below 2mA; voltage out of range from -30V to +30V may damage the circuit.

It is recommended to use PNP output type sensors, switches or PLC.

This input delay time may be variable because of OS thread scheduling and user programming style, usually range from 0.1ms to 1ms.

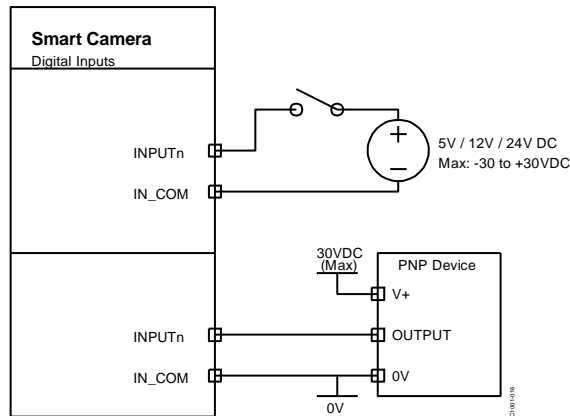


Figure 5-6 General Input Port Connection

For more information about general input ports, please refer to [Chapter 6.5](#).

5.4 General Output Ports

The general output port is a 10-pin port with mark "OUTPUT", as shown in Figure 5-2. It is compatible with 16-24AWG wire.

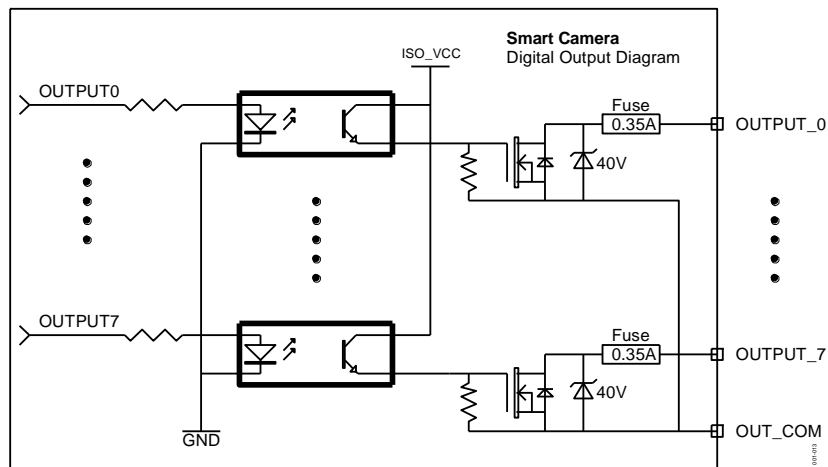


Figure 5-7 General Output Port Diagram

There are 8 photo-isolated general output ports (NPN type) for driving resistive load or inductive load. The ports can sink 350mA/30V current. These ports need no fly-wheel diode when driving inductive load (for example relay, as shown in Figure 5-8), because there are zener diodes onboard. The output saturation voltage V_{on} is less than 0.2V@350mA, and leakage current $I_{off-leak}$ is less than 50uA.

As the concept of relay (definitions of OPEN and CLOSE), the MOSFET does not conduct when API sent command OPEN; when command CLOSE is sent, the MOSFET conducts and sinks up to 350mA current. The camera default setting is no output (OPEN) when power on.

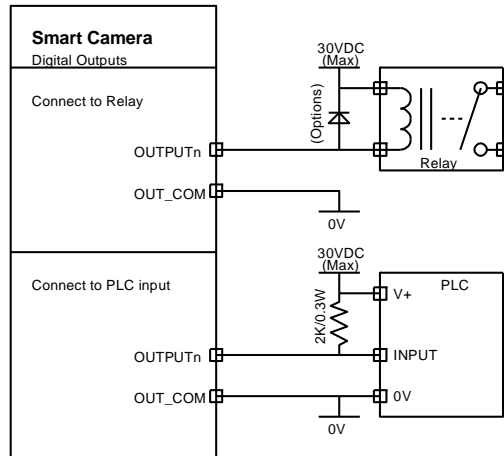


Figure 5-8 General Output Port Connection

This output delay time may be variable because of OS thread scheduling and user programming style, usually range from 0.1ms to 1ms.

For more information about general input ports, please refer to [Chapter 6.6](#).

5.5 RS232 Port

There is an RS232 port (standard DB9 connector) with mark "RS232", shown in Figure 5-9.

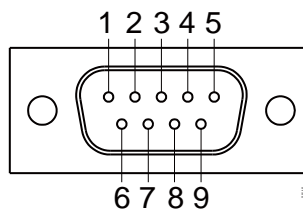


Figure 5-9 DB9 Port

Table 5-1 RS232 Ports

Pin Number	Name	Type	Description	Notes
2	RX	input	Input (for external device)	
3	TX	output	Output (for external device)	
5	GND	power	Signal Ground	
1,4,6,7,8,9	NC	NA	No connection	

The RS232 port has only RX/TX signals for external devices like PLC, with supporting baud rate (bps): 300, 600, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 128000, 153600 and 230400.

5.6 RS485 Port

There is an RS485 port (standard DB9 connector) with mark "RS485", shown in Figure 5-9.

Table 5-2 RS232 Ports

Pin Number	Name	Type	Description	Notes
1	RS485_A	in/out	RS485+ (or A)	
2	RS485_B	in/out	RS485- (or B)	
5	GND	power	Signal Ground	
3,4,6,7,8,9	NC	NA	No connection	

The RS485 port supports the baud rates (bps) including 300, 600, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 128000, 153600, 230400, 256000 and 460800.

5.7 Ethernet Port

There is a Gigabit Ethernet with mark "GigaEthernet", shown in Figure 5-2.

This port is used to connect with PC or PLC. Also, it can also connect with other GigE cameras. PoE (Power over Ethernet) function is not supported.

If working in Gigabit mode, CAT-6 or CAT-6E cable is recommended for better performance.

The default IP address is 192.168.1.218.

5.8 USB2.0 Ports

There are 3 USB2.0 ports with mark "USB1", "USB2", "USB3", shown in Figure 5-2.

These USB ports are for connecting keyboard, mouse, USB flash drive and other general USB external devices. The output power of each port is 5V/0.5A.

5.9 Power Button

There is a self-lock push button with mark "POWER" as shown in Figure 5-2.

OS for Woodpecker1 camera is highly customized by ROSEEEK to avoid any accident from power failure, which means all Woodpecker1 series cameras are able to work on production line with frequent power off without shutting down OS from desktop.

6 Operation Instructions

Woodpecker1 series industrial smart camera is designed for machine vision applications. Here are some instructions when using the camera.

6.1 SDK

ROSEEK provides mature SDK for Woodpecker1 camera. Please contact our technical support for more details.

SDK contains easy-to-read Demo program, and detailed technical documents for users to develop high efficiency application software for different requirements.

6.2 Shutter Time

6.2.1 Minimum Shutter Time

Like other industrial camera, Woodpecker1 has minimum shutter time limit. Because the features of different CCD/CMOS sensors are different, this minimum value for different models is different. If using illegal parameter (lower than the minimum value) to set shutter time by API, camera will set the only according to the minimum value.

Table 6-1 Minimum Shutter Time

Model	Minimum Value (us)	Note
RSWP105M/N/S/A	8	
RSWP112M/S	10	
RSWP115M/S	17	
RSWP126N/B	11	
RSWP130M/S	14	
RSWP150M/S	14	
RSWP180M/S	14	
RSWP155M/A	20	
RSWP160M/S	3	
RSWP1C0M/S	3	

The shutter time is adjustable by microseconds.

6.2.2 Maximum Shutter Time

The maximum shutter time is 1 second, and it is adjustable by microseconds.

6.3 LED Drivers

ROSEEK provides constant current LED drivers on both camera and I/O module with adjustable current (LED brightness) for machine vision applications.

ROSEEK provides special LED driving method to drive the LED only flash during the exposure time of CCD/CMOS. This function can greatly increase the life cycle of LED and reduce the system power consumption.

6.4 Trigger Input

6.4.1 Active Triggering Edge

The trigger input port accepts rising edge signal or falling edge signal. The default setting is rising edge signal. User can change the setting by ROSEEEK APIs.

It is recommended to use PNP output type sensors, switches or PLC, because they can direct interface with the trigger port.

6.4.2 Input Signal Glitch Filter

The input signal glitch filter function is disabled by default.

If this function is enabled, when the first trigger signal edge is received, system will double checks after the glitch filter delay time. Only when two results (before and after glitch filter delay time) are the same can the input trigger be accepted.

For general digital sensors, this function is not recommended. However, for input trigger from mechanical switch, this function is very useful to avoid spurious triggering.

6.4.3 Triggering Delay

The time period between trigger signal input and image exposure starting is called triggering delay.

The triggering delay of Woodpecker1 camera is 20 microseconds.

6.4.4 Delayed Triggering

For some machine vision applications, the triggering sensor is far from the camera, between which there are several components moving on production lines. In this case, delayed triggering function is necessary.

Woodpecker1 camera supports up to 32 delayed instances, each instance can be delayed up to 60 seconds, time precision: 1 microsecond.

6.5 General input

Please refer to Figure 5-6 for general input diagram.

6.5.1 Active Triggering Edge

The trigger input port accepts rising edge signal or falling edge signal. The default active edge is rising edge. User can change the setting by ROSEEEK APIs.

It is recommended to use PNP output type sensors, switches or PLC, because they can direct interface with the trigger port.

6.5.2 Input Signal Glitch Filter

The input signal glitch filter function is disabled by default.

If this function is enabled, when the first trigger signal edge is received, system will double checks after the glitch filter delay time. Only when two results (before and after glitch filter delay time) are the same can the input signal be accepted.

For general digital sensors, this function is not recommended. However, for input trigger from mechanical switch, this function is very useful to avoid malfunction.

The glitch filter delay time should be set according to the field tests.

6.5.3 Input Delay

The time period between general input and user's program receiving message is called input delay.

This input delay time may be variable because of OS thread scheduling and user programming style, usually range from 0.1ms to 1ms.

6.6 General output

Please refer to Figure 5-8 for general input diagram.

As the concept of relay (definitions of OPEN and CLOSE), the MOSFET does not conduct when API sent command OPEN; when command CLOSE is sent, the MOSFET conducts and sinks up to 350mA current. The camera default setting is no output (OPEN) when power on.

This output delay time may be variable because of OS thread scheduling and user programming style, usually range from 0.1ms to 1ms.

6.7 Camera Recovery

Woodpecker1 series industrial smart camera supports recovery function, including BIOS and OS recovery. User can easily recover the camera to factory default status.

7 COLOR FILTER TRANSMISSION

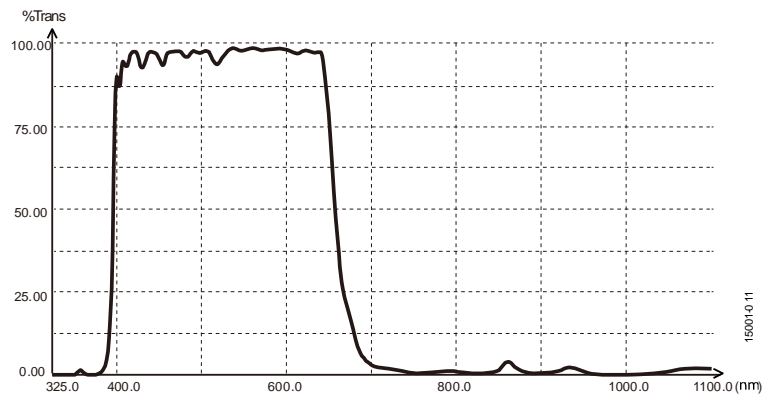


Figure 7-1 IR-cut filter transmission

8 Dimensions

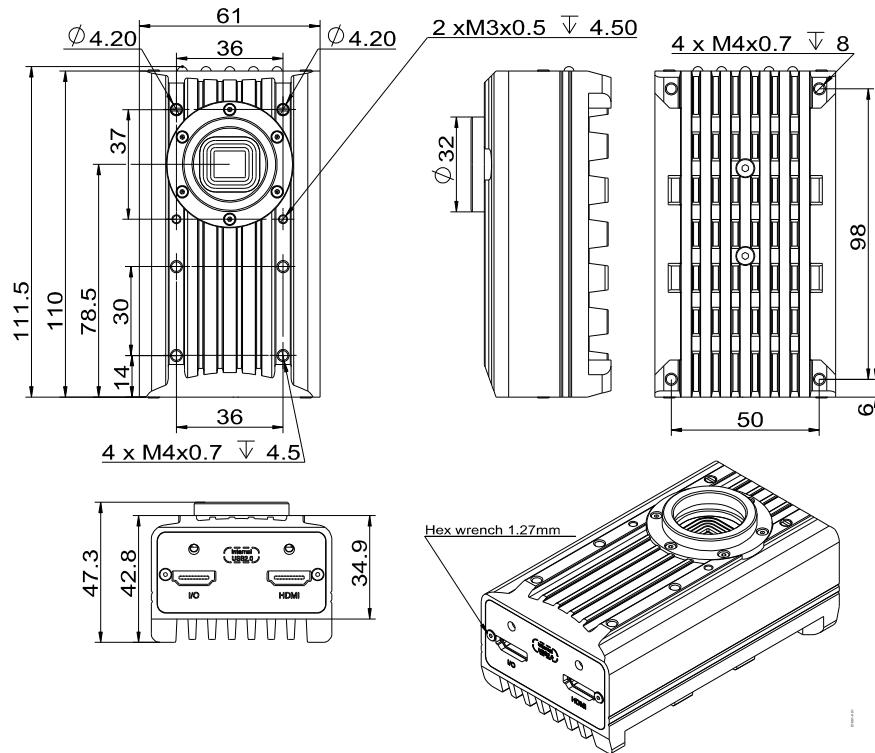


Figure 8-1 Outline Dimensions of Camera

Note:

- [1] Unit: mm.
- [2] Materials: hard aluminum alloy.
- [3] Color: silver gray.

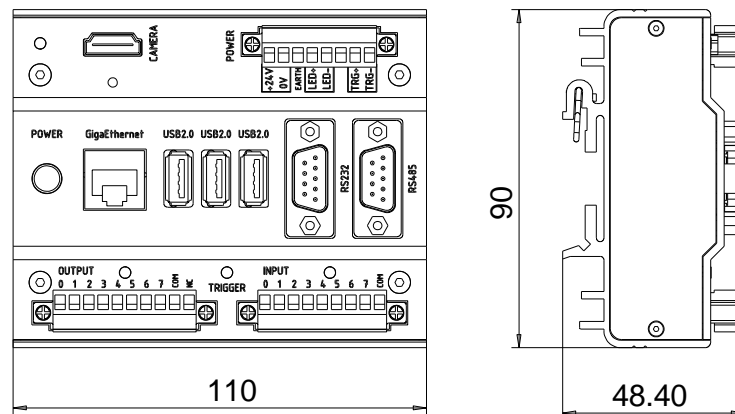


Figure 8-2 Outline Dimensions of I/O Module

9 DOCUMENTS

9.1 Related Documents

Technical documents for Woodpecker1 series industrial smart camera are listed below:

Table 9-1 Document

No.	Name	Status	Publish
1	Woodpecker1 Series Smart Camera - Brief	Free	PDF
2	Woodpecker1 Series Smart Camera - Specifications	Free	PDF
3	Woodpecker1 Series Smart Camera - Quick Start	Free	PDF
4	Woodpecker1 Series Smart Camera - Programming API Guide	NDA	PDF

Note:

[1] All copyrights reserved.

9.2 Intellectual Property Statement

Patent list on Woodpecker1 camera:

1. Patent: use HDMI cable for data transmission in industrial camera
2. Patent: internal USB port for industrial imaging equipment
3. Patent: product appearance patent

10 CONTACT

Shanghai Ruishi Machine Vision Technology Co., Ltd.

TEL: +86 21 55661685

FAX: +86 21 62815497

Website: www.roseek.com/en/

Address: 11F, No.248, Daxue Rd., Shanghai 200433, China

"ROSEEK" is a registered trade mark.

